CLAIMS

1. A substrate processing equipment comprising

heating means that heats a substrate accommodated in a processing chamber,

temperature detection means that detects temperature in the processing chamber,

substrate temperature prediction means that predicts temperature of the substrate periodically, and

control means that mixes that temperature in the processing chamber, which is detected by the temperature detection means, and a predicted temperature, which is predicted by the substrate temperature prediction means in the previous period, to use the substrate temperature prediction means to predict temperature in a period subsequent to the previous period to control the heating means with the use of the predicted temperature.

2. A substrate processing equipment comprising

heating means that heats a substrate accommodated in a processing chamber,

first temperature detection means that detects temperature in the neighborhood of the heating means,

second temperature detection means that detects temperature in the neighborhood of the substrate, and

control means that mixes a first predicted temperature of the substrate calculated from the temperature detected by

the first temperature detection means and a second predicted temperature of the substrate calculated from the temperature detected by the second temperature detection means to control the heating means with the use of the predicted temperature as mixed.

3. The substrate processing equipment according to claim 1, wherein the heating means comprises a plurality of zone heating means corresponding to a plurality of heating zones, and

the substrate temperature prediction means calculates a detection predicted value of corresponding virtual temperature detection means every substrate being an object of the predicted temperature, according to an extent, to which the plurality of zone heating means, respectively, interfere with the substrate being an object of a predicted temperature, and predicts temperature in a period subsequent to the previous period by means of the detection predicted value and the predicted temperature in the period one period before.

4. The substrate processing equipment according to claim 2, wherein the control means varies a mixing ratio of the first predicted temperature and the second predicted temperature of the substrate according to a magnitude of variation of temperature detected by the second temperature detection means.

5. The substrate processing equipment according to claim

1, wherein the heating means comprises a plurality of zone heating means,

the temperature detection means comprises zone-temperature detection means corresponding to the zone heating means, respectively, and

the control means sets virtual temperature detection means in a position nearer to a substrate, temperature of which is to be predicted, than to other substrates, calculates a detection value of the virtual temperature detection means on the basis of the corresponding relationship between the virtual temperature detection means and the zone-temperature detection means and a measured value measured by the zone-temperature detection means, predicts a substrate temperature in a period subsequent to the previous period by means of the predicted value as calculated and that substrate temperature in the previous period, which is predicted by the virtual temperature detection means, and controls the respective zone heating means on the basis of the substrate predicted temperature.

6. The substrate processing equipment according to claim 2, wherein the heating means comprises a plurality of zone heating means,

the temperature detection means comprises first zone-temperature detection means and second zone-temperature detection means, which correspond to the zone heating means,

respectively, and

the control means sets virtual temperature detection means in a position nearer to a substrate, temperature of which is to be predicted, than to other substrates, calculates a detection value of the virtual temperature detection means on the basis of the corresponding relationship between the virtual temperature detection means and the first zone-temperature detection means or the second zone-temperature detection means and a measured value measured by the first zone-temperature detection means or the second zone-temperature detection means, predicts a substrate temperature in a period subsequent to the previous period by means of the predicted value as calculated and that substrate temperature in the previous period, which is predicted by the virtual temperature detection means, and controls the respective zone heating means on the basis of the substrate predicted temperature.

7. The substrate processing equipment according to claim 1, further comprising output means that outputs a temperature detected by the temperature detection means in substantially the same period as that period, in which the control means controls output of the heating means, by displaying and recording or either of them.

8. The substrate processing equipment according to claim 2, further comprising output means that outputs a temperature detected by the temperature detection means in substantially

the same period as that period, in which the control means controls output of the heating means, by displaying and recording or either of them.

9. The substrate processing equipment according to claim 3, further comprising output means that outputs a temperature detected by the temperature detection means in substantially the same period as that period, in which the control means controls output of the heating means, by displaying and recording or either of them.

10. The substrate processing equipment according to claim 5, further comprising output means that outputs a temperature detected by the temperature detection means in substantially the same period as that period, in which the control means controls output of the heating means, by displaying and recording or either of them.

11. The substrate processing equipment according to claim 6, further comprising output means that outputs a temperature detected by the temperature detection means in substantially the same period as that period, in which the control means controls output of the heating means, by displaying and recording or either of them.

12. A substrate processing method comprising the steps of:

heating a substrate accommodated in a processing chamber,

detecting a temperature in the processing chamber,

predicting a temperature of the substrate periodically, and

mixing the detected temperature in the processing chamber and a predicted temperature, which is predicted periodically in the previous period, to predict a temperature in a period subsequent to the previous period to control heating of the substrate with the use of the predicted temperature.

13. A substrate processing method for a substrate processing equipment comprising a reaction chamber that processes a substrate, heating means that heats an interior of the reaction chamber, control means that controls the heating means, first temperature detection means that detects temperature between the heating means and the substrate, and second temperature detection means that detects temperature nearer to the substrate than the first temperature detection means, the method comprising the steps of:

measuring a temperature with the first temperature detection means,

calculating a first substrate predicted temperature from the temperature measured by the first temperature detection means,

measuring a temperature with the second temperature detection means,

calculating a second substrate predicted temperature

from the temperature measured by the second temperature detection means, and

mixing the first substrate predicted temperature and the second substrate predicted temperature to control the heating means.